

Birla Institute of Technology & Science, Pilani (Rajasthan) India**Instruction Division****Department of Computer Science & Information Systems****Second Semester: 2016-2017****Course Handout: Part-II***<Draft version, To be enhanced until January 21, 2017>***Date:** 11/01/2017

In addition to part-I (General handout for all courses appended to the timetable) this portion gives further specific details regarding the course:

Course No. : CS F 441
Course Title: Selected Topics from Computer Science (*Cognitive Computing*)
Instructor-in-Charge: RAHUL BANERJEE
Co-Instructors: **Prof. Santanu Choudhury (CEERI): Lead Instructor,** Dr. Kamlesh Tiwari, Dr. Kuldeep Kumar

1. **Objective and Scope of the Course:** *This course on aims at picking select topics of contemporary interest and significance in CSE and exploring them well enough to lead to a deep understanding of associate theoretical as well as practical aspects.*

Cognitive computing addresses complex situations that are characterized by ambiguity and uncertainty; in other words it handles human kinds of problems. In these dynamic, information-rich, and shifting situations, data tends to change frequently, and it is often conflicting. The goals of users evolve as they learn more and redefine their objectives. To respond to the fluid nature of users' understanding of their problems, the cognitive computing system offers a synthesis not just of information sources but of influences, contexts, and insights.

Cognitive computing systems redefine the nature of the relationship between people and their increasingly pervasive digital environment. They may play the role of assistant or coach for the user, and they may act virtually autonomously in many problem-solving situations. The boundaries of the processes and domains these systems will affect are still elastic and emergent. Their output may be prescriptive, suggestive, instructive, or simply entertaining.

At the end of this course, students are expected to be able to analyze, design and build applications of cognitive systems of contemporary significance.

2. **Course Material:** *<Being a senior-level course, no single book shall be exact fit the bill.>*

A> Reference Books: *Shall be recommended in the class by the Lead Instructor and via Nalanda LMS by the course team.*

B> Papers: *Shall be recommended in the class by the Lead Instructor and via Nalanda LMS by the course team.*

C> Technical Reports & Theses: *Shall be recommended in the class by the Lead Instructor and via Nalanda LMS by the course team.*

D> Patents: *Shall be recommended in the class by the Lead Instructor and via Nalanda LMS by the course team.*

E> Additional support material: *Course Page on BITS Pilani's Learning Management System (Nalanda): This platform shall be used for weekly self-assessment quizzes to be taken by you online for getting a feel of how well you are able to understand the topics discussed in lecture sessions. This platform would also host all Lab-Sheets and Lecture Material. All Course-specific Notices, Marks and Grades shall be uploaded at: <http://nalanda.bits-pilani.ac.in>.*

3. Course Plan: < *Interaction Sessions: As per Time Table. Tentative: M/W/F: 9th hour: Likely to change.* >

Lecture Nos.	Topic(s) to be discussed	Any paper or material to be read
1-3	<i>Introduction: What is Cognitive Computing, Historical Perspective, Applications</i>	TBA
4-6	<i>Cognitive Computing and Neural Networks – Reverse Engineering Brain</i>	TBA
7-9	<i>Cognitive Analytics</i>	TBA
10-12	<i>Applications: Food water, energy, healthcare</i>	TBA
13-15	<i>Cognitive Dialog Systems and Spoken Language Research</i>	TBA
16-20	<i>Cognitive IOT</i>	TBA
20-22	Case-study-1	TBA
23-25	Case-study-2	TBA
26-28	Paper Discussion-1	TBA
29-31	Paper Discussion-2	TBA
32-34	Patent Discussion-1	TBA
35-37	Patent Discussion-2	TBA
38-40	Summarization and end-term discussions	TBA

4. Evaluation Scheme: < *All evaluation components are MANDATORY. Any failure to participate in one or more evaluation component may lead to an 'NC' report. Total Marks: 100. Evaluation scheme is, currently, tentative.* >

Evaluation Component	Type	Duration & Other Details	Weight	Date
<i>EC-1: Project</i>	<i>Lab-based / Take-home Software Design and Implementation Project OR a Study Project</i>	<i>18 weeks</i>	<i>60%</i>	<i>To be chosen and project outline to be submitted by the student latest by the first week of February (20%), to be evaluated once in March (Mid-stage Progress: 30%) and next in April (End-term Demo / Defence: 30%)</i>
<i>EC-2: Research Seminar</i>	-	<i>4 weeks</i>	<i>20%</i>	<i>April 1-15, 2017</i>
<i>EC-3: Term Paper / Research Summarization</i>	-	<i>Overlapping 08 weeks</i>	<i>20%</i>	<i>April 16-21, 2017</i>

5. Honour Code: *Each student shall have to agree to the **Honour Code** at the Any-Learn portal, prior to use.*

6. Anti-Plagiarism Policy: *In the context of any, project, report or laboratory work etc. no form of plagiarism shall be tolerated. In the event of discovery of any form of plagiarism, the student shall be awarded ZERO*

marks against the relevant evaluation component and in case of repeated instance of such an occurrence, the case may be reported to the appropriate committee of the Institute for appropriate action.

*7. **Pull-up Policy:** In case of border-line cases, students who may miss a higher grade by ONE mark, a possible pull up to the next higher grade might be considered, provided that in each of the individual components, student scores equal to or higher than the class average and has no verified case of plagiarism or use of unfair means against him / her, in this course.*

8. Notices: All notices shall be electronically displayed only at the Course Page at the *Nalanda LMS* portal.

9. Make-up Policy: Only in genuine cases, on a case-by-case basis, Make-ups shall be allowed. For surprise quizzes and Lab-evaluations, there shall be no Make-up grants.

10. Chamber Consultation Hours: RB: Mon: 5 – 6 PM (6121-N), SC: TBA (6120-B), KT: TUE: 4-5 PM (6120-N), KK: TUE: 4-5 PM (6121-L).

Instructor-in-Charge